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EXAMINER	
HAMA, JOANNE	

ART UNIT	PAPER NUMBER
1632	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/781,142	KYRKANIDES, STEPHANOS	
	Examiner	Art Unit	
	Joanne Hama, Ph.D.	1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43,72-75 and 83-91* is/are pending in the application.

4a) Of the above claim(s) *44-71,76-82 and 92-132* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43,72-75 and 83-91* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/24/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

This Application is a CIP of PCT/US03/13672, filed May 2, 2003, which claims benefit to U.S. Provisional Application 60/377,503, filed May 2, 2002.

Election/Restrictions

Applicant's election with traverse of Group I (claims 1-43, 72-75, 83-91) in the reply filed on October 21, 2004 is acknowledged. The traversal is on the ground(s) that the Examiner has not demonstrated that a serious burden would be required to examine all the claims. This is not found persuasive because the each Invention is independent and distinct, as demonstrated by its different class and subclass, and each will require separate searches in the art, of which the search for one Invention is not required for the search of another, demonstrating the burden of search, as was stated in the Restriction Requirement.

The requirement is still deemed proper and is therefore made FINAL.

Claims 44-71, 76-82, 92-132 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on October 21, 2004. Claims 1-43, 72-75, 83-91 are under consideration in this Office Action.

Information Disclosure Statement

The listing of references in the specification (pages 167-183) is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents,

publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

The information disclosure statement filed June 24, 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-4, 72 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-6 are broad and can be read wherein "composition" encompasses human. Thus, humans, which are comprised of the HEX-α and HEX-β gene, are encompassed by this claim. Further, humans who have been infected with a picorna virus are encompassed by claim 4. Picorna virus allows "internal" binding of ribosomes on mRNA to translate a second message on a dicistronic mRNA. This rejection can be obviated by stating, "the composition comprising an isolated nucleic acid...".

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-13, 15-18, 20-22, 24-31, 39-43, 72-75, 84-88, 90 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The final Written Description Examination guidelines that were published on January 5, 2001 (66 FR 1099; available at http://www.uspto.gov/web/menu/current.html#register).

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111 (Fed. Cir. 1991), clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" Vas-Cath Inc. v. Mahurkar, 19USPQ2d at 1117. The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." Vas-Cath Inc. v. Mahurkar, 19USPQ2d at 1116.

While the specification teaches that β-hexosaminidase is a hetero- or homodimer made up of two subunits arising from two separate genes, HexA and HexB, no

guidance is given in claims 1-13, 15-18, 20-22, 24-31, 39-43, 72-75, 84-88, 90 as to what HexA, HexB, a constitutive promoter, and a cell specific promoter are. The claimed invention as a whole is not adequately described if the claims require essential or critical elements which are not adequately described in the specification and which are not conventional in the art as of Applicant effective filing date. Possession may be shown by actual reduction to practice, clear depiction of the invention in a detailed drawing, or by describing the invention with sufficient relevant identifying characteristics (as it relates to the claimed invention as a whole) such that a person skilled in the art would recognize that the inventor had possession of the claimed invention. Pfaff v. Wells Electronics, Inc., 48 USPQ2d 1641, 1646 (1998). In the instant case, claims 1-11 are to a nucleic acid wherein the nucleic acids comprise two genes referred to by name. At this point, however, it is not clear what is encompassed by this name. This raises two issues. First, do claims 1-11 encompass mouse, human, fish, and chicken homologues of HEX-α and HEX-β? How does a skilled artisan know what a HEX-α gene is in any organism, if one were to find a new homologue? What characteristics would one need to know about HEX-α that would discriminate it from any other protein? What characteristics would one need to know to discriminate HEX-α from HEX-β and from other possible future isolates of this protein family? Second, if ten years down the road, someone were to isolate HEX-α and HEX-β in a disease state other than Sandoff or Tay-Sachs, and were to call these genes by a different name (e.g. bloodthinner1 and bloodthinner2), would one skilled in the art intuitively know that bloodthinner1 and bloodthinner2 were the same as HEX-α and HEX-β? Furthermore, if one were to

design the same constructs described here in the specification and substitute HEX-α and HEX-β with bloodthinner1 and bloodthinner2, would that raise issues of infringement, if this application were a patent? Characterization is not adequate if one uses a gene name as one of the parameters of a nucleic acid construct. The skilled artisan cannot envision all the family members and the homologues comprised in the HEX-α/HEX-β family.

Moreover, the claims are also to generality of sequences such as a constitutive promoter (claim 17) and a cell specific promoter (claim 87). A skilled artisan cannot envision all sequences that would qualify as a constitutive promoter and a cell specific promoter. In addition, the skilled artisan cannot envision all sequences that would qualify as a CMV promoter (claims 18, 25), a beta actin promoter (claims 20-22), a nuclear enolase specific promoter (claim 88), and a COLL1A1 promoter (claim 90). The major problem with claiming these promoters generally is because one skilled in the art cannot reasonably predict where these promoters will express and what effects expression of a transgene will have on these cells. Oftentimes, a skilled artisan would need to characterize the expression pattern of a putative promoter. While it may be thought that the promoter is expressed in the nervous system, there are many examples where the expression is confined to a certain subset of neural cells. Alternatively, the promoter could drive expression in the nervous system and unexpectedly, in the kidneys.

Claims 12, 16 are to a composition wherein HEX-β has at least 70%, 75%, 80%, 85%, 90%, or 95% identity to SEQ ID NO: 3 and that HEX-α has at least 70%, 75%,

80%, 85%, 90%, or 95% identity to SEQ ID NO: 1. Claim 73 is to a composition wherein HEX-β element comprises a sequence having at least 80% SEQ ID NO: 1 and the HEX-α element comprises a sequence having at least 80% SEQ ID NO: 1. The specification does not teach how to make or use any HEX-β or HEX-α with 70-99% sequence similarity to that of SEQ ID NOs: 3 and 1. It is implied from the specification that HEX-α and HEX-β and all their amino acid mutant forms possess the ability to form hetero- and homodimers and that these dimers have the ability to perform a biological function. However, the specification does not teach what are the vital amino acids in HEX-β and HEX-α which confer activity and dimerization in the proteins. Further, the specification does not teach the skilled artisan how to predictably make amino acid substitutions which confer activity and dimerization in HEX-β and HEX-α. One skilled in the art cannot envision all the possible single amino acid combinations which can be substituted and yet preserve the activity and function of HEX-β and HEX-α. Further, one cannot envision all the possible combinations, up to 70% sequence identity to SEQ ID NOs: 3 and 1, wherein a functional, viable HEX-β and HEX-α is produced.

Therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method used. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of identifying it. See *Fiers v. Revel*, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016 (Fed. Cir. 1991).

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481, 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only an isolated nucleic acid sequence which encodes human HEX-α consisting of recited SEQ ID NO. 2 and human HEX-β consisting of recited SEQ ID NO. 4, the IRES consisting of recited SEQ ID NO. 5, the constituitive promoter of CMV consisting of SEQ ID NO. 32, the beta actin promoter consisting of SEQ ID NO: 26, the cell specific promoters of SEQ ID NOs. 69, 70, and 71 meet the written description provision of 35 U.S.C. §112, first paragraph meet the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

Applicants attention is drawn to the decision of *The Regents of the University of California v. Eli Lilly and Company* (CAFC, July 1997) wherein it was stated:
In claims involving chemical materials, generic formulas usually indicate with specificity what the generic claims encompass. One skilled in the art can distinguish such a formula from others and can identify many of the species that the claims encompass. Accordingly, such a formula is normally an adequate written description of the claimed genus. In claims to genetic material, however, a generic statement such as "vertebrate insulin cDNA" or "mammalian cDNA," without more, is not an adequate written description of the genus because it does not distinguish the claimed genus from others,

except by function. It does not specifically define any of the genes that fall within its definition. It does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus. A definition by function, as we have previously indicated, does not suffice to define the genus because it is only an indication of what the gene does, rather than what it is. See *Fiers,* 984 F.2d at 1169-71, 25 USPQ2d at 1605-06 (discussing *Amgen*). It is only a definition of a useful result rather than a definition of what it achieves as a result. Many such genes may achieve that result. The description requirement of the patent statute requires a description of an invention, not an indication of a result that one might achieve if one made that invention. *See In re Wilder*, 736 F.2d 1516, 222 USPQ 369, 372-373 (Fed. Cir. 1984) (affirming rejection because the specification does "little more than outlin[e] goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate."). Accordingly, naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material.

Because Applicants have failed to provide an adequate written description of the materials used in the compositions and methods claimed and because there is no evidence that Applicants possessed any constructs comprising HEX-α and HEX-β, an IRES, and a constitutive or cell specific promoter, beyond that disclosed and/or known in the prior art, the rejected claims fail to meet the written description requirement under 35 U.S.C. 112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that

the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12, 13, 15, 16, 73, 74, 75 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12, 16 are to a composition wherein the HEX-β gene has at least 70%, 75%, 80%, 85%, 90%, or 95% identity to SEQ ID NO: 3 and that HEX-α has at least 70%, 75%, 80%, 85%, 90%, or 95% identity to SEQ ID NO: 1. Claim 73 is to a composition wherein HEX-β element comprises a sequence having at least 80% SEQ ID NO: 1 and the HEX-α element comprises a sequence having at least 80% SEQ ID NO: 1. These claims are confusing because they depend on perspective. For example, when comparing a full-length sequence with one missing 30% of the C-terminus, the full-length protein is 70% homologous to the truncated protein, while the truncated protein is 100% homologous to the full-length protein. Another issue with these claims is that they encompass fusion proteins, of which the making and use has not been taught in the specification. For example, if the protein interaction domain of HEX-α had been replaced with a homeodomain, the modified HEX-α construct would have at least

70% identity to SEQ ID NO: 1. However, nothing in the specification teaches how to use modified HEX-α.

Claims 13 and 74 are to a composition wherein any change from SEQ ID NO: 3 or SEQ ID NO: 1 is a conservative change. The word "conservative" is a relative term. In some cases, "conservative" could mean that the modified protein has the same activity as the wild type protein. In other cases, "conservative" could mean having 70% of the activity of the wild type protein.

Claims 15 and 75 are to a composition wherein the sequence encoding HEX-b hybridizes to SEQ ID NO: 2 under stringent conditions and wherein the sequence encoding HEX-α hybridizes to SEQ ID NO: 4 under stringent conditions. The word "stringent" is a relative term. Depending on what the purpose of the hybridization is would determine the parameters that define the stringent conditions. For example, an artisan looking for other members of a gene family would not use as stringent conditions in hybridization as another artisan looking for BAC clones that contained his/her target gene. However, the artisan looking for the members of a gene family would still say that the conditions were stringent because the conditions of hybridization were such that non-specific interactions were at a minimum.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakai et al. (1991, Cytogenet. Cell Genet. 56: 164), Wood et al (1989, Nucleic Acid Research, 17: 2368), and Belsham and Sonenberg (1996, Microbiological Reviews, 60: 499-511).

Claims 1-3 are broad that they read on humans who have the nucleic acid sequences comprising HEX-α and HEX-β. Nakai et al. states that HEX-α is mapped to chromosome location 15q23---q24 (see PubMed printout). Wood et al. state that HEX-β is located on Chromosome 5 (see "chromosomal localization" section). Claim 4 is broad that they encompass humans who have been infected with a *Picornaviridae* virus, in particular the rhinovirus, and have a head cold (Belsham and Sonenberg, page 499, first paragraph, line 5 and 6). Picornaviruses use an IRES to initiate translation (page 500, Figure 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-41, 72-75, 83-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poeschla et al. (1998, Nature Medicine, 4: 354-357) and Jang et al. (1989, Journal of Virology, 63: 1651-1660) in view of the NCBI Annotation Project for

providing the coding sequence for Homo sapiens hexosaminidase A, alpha polypeptide (XM_037778, submitted May 9, 2002), the coding region for Homo sapiens hexosaminidase B (beta polypeptide (XM_032554, submitted October 11, 2001), Beccari, et al. for providing the coding sequence for Mus musculus hexosaminidase A (NM_010421, published in 1992 to Biochem J., 285 (part 2):593-596), Triggs-Raine et al. for providing the coding sequence for mouse hexosaminidase B (NM_010422, published in 1994 to Biochim. Biophys. Acta 1229:79-86), Yonemura et al. for providing a chicken beta actin promoter (E02199, published in 1990 in Patent No. JP1990005890), Armentano et al. for providing cytomegalovirus promoters (BD136067 BD136064, published in 2002 in a Patent No. JP2002508974-A), Sloan and Virgin for providing the Murid herpesvirus 1 promoter (HS5E1PA, submitted in 1996), Hennighausen and Fleckenstein for the human herpesvirus 5 promoter (X039222, published in 1986 in EMBO J. 5: 1367-1371), Suminaga et al. for providing the sequence for the human beta-actin promoter (E06566, published in 1994, in Patent No. 1994007168), Miyazaki et al. for providing the chicken beta-actin promoter (E02198, E02197 E02196 E02195 E02194, published in 1990 in Patent No. JP1990005884-A), Suminaga et al. for the human beta-actin promoter (genomic DNA) (E01452, published in 1987, Patent No. JP 1987262995-A/1), and Miyazaki et al. for providing a DNA encoding a hybrid promoter composed of chicken beta-actin promoter and rabbit beta-globin promoter (E03011, filed in 1991, in Patent No. 1991168087-A/1). Printouts of the sequences from the National Center for Biotechnology Information (NCBI) listed here have been provided.

At the time of filing, work by Poeschla et al. demonstrated that the lentiviral vector made from feline immunodeficiency virus (FIV), a virus that specifically infected cats, could be modified to infect human cells (see also Figure 1). Poeschla et al. demonstrated that the FIV U3 element is the sole restriction to the productive phase of FIV replication in human cells and that the viral proteins could be produced in *trans* in replication-defective fashion (page 355, first column, first paragraph, lines 11-14). Poeschela et al. teach that the modified FIV vectors could infect growing and G1/S-arrested cells (by the addition of aphidicolin 20ug/ml) (page 355, first column, third paragraph, line 6 to second column, first paragraph, line 2) and neuronal cells (page 56, first column, first full paragraph). While Poeschla et al. demonstrate that the FIV vector could infect human cells and drive reporter gene expression, they do not demonstrate that the vector expresses alpha and beta forms of hexosaminidase.

At the time of filing, the use of the HIV lentiviral vector system was known in the art. The vectors are currently being sold by Invitrogen. According to the website catalog page, the lentiviral system gives one the ability to regulate expression of one's gene and to stably insert the construct into the genome of nearly any mammalian cell type (see catalog page printout, first paragraph under "Description").

At the time of filing, work by Jang et al. demonstrated that COS-1 cells transfected with dicistronic vectors, pβ-ECAT2 or pMT2-ECAT2, were infected with poliovirus type1 at a mutiplicity of infection of 100 PFU/cell. Expression of gene products was monitored by pulse-labeling with ^{35}S methoinine for 30 minutes at 0, 3, or 4 hours post infection. The proteins were then analyzed by sodium-dodecyl sulfate-

polyacrylamide gel electrophoresis (page 1654, first column, section headed "Expression of dicistronic vectors in poliovirus-infected cells"). Jang et al. showed that pβ-ECAT2, which was comprised of an a 5' NTR (the IRES), the N-terminal coding sequence of the human β-globin/C-terminal coding sequence of ADA, a 5'NTR of EMCV, and the CAT (chloramphenicol acetyltransferase) gene and pMT-ECAT2, which was comprised of a 5' NTR, the ADA (human adenosine deaminase) coding sequence, another 5'NTR, and the CAT gene. While Jang et al. teach that pβ-ECAT2 was able to express the β-globin/ADA hybrid protein and CAT and that pMT2-ECAT2 was able to express ADA and CAT, Jang et al. do not teach expression of HEX-α and HEX-β expression from dicistronic mRNA.

Therefore, it would have been *prima facie* obvious to one having ordinary skill in the art at the time the invention was made to substitute the coding region of the lacZ reporter gene with a gene encoding HEX-α or HEX-β, taught by the NCBI Annotation Project, in the vector taught by Poeschla et al. It would have also been obvious, given the teachings of Jang et al. to express HEX-α and HEX-β, via an IRES, in the vector taught by Poeschla et al. Futher, the techniques of DNA cloning are well known in the molecular biology art. It would also have been obvious to substitute other regulatory regions, such as promoters (e.g. other constitutive promoters or cell-type specific promoters) and genes in the vector taught by Poeschla et al. to develop a FIV vector that expresses one's candidate gene(s) ubiquitously in the organism or specifically in

target tissues. It would have also been obvious to substitute the FIV vector system for the HIV vector system taught by Invitrogen.

One having ordinary skill in the art would have been motivated to these genes, one for the other, in order to obtain a FIV or a HIV system which can be used to infect cells and to express one's gene(s) of choice.

There would have been a reasonable expectation of success given the results of Poeschla et al. and Jang et al. demonstrating the ability to transfect replicating and non-replicating human cells, to be able to express genes from these vectors, and to be able to express more than one gene from these vectors to deliver multiple gene products to cells.

Thus, the claimed invention as a whole was clearly *prima facie* obvious.

Conclusion

No claims allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joanne Hama, Ph.D. whose telephone number is (571) 272-2911. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, Ph.D. can be reached on (571) 272-0804. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JH

Joel Wortman
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